Make it even

Materials:

- tubs of counters and/or Unifix cubes
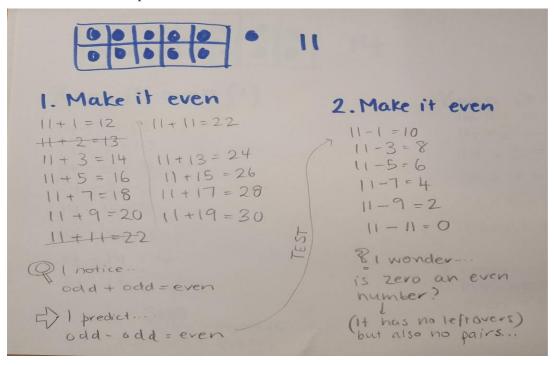- paper or maths workbook (one per student)

The activity:

1. Ask each student (or student pair) to take a handful of counters. Instruct them to make an array (two equal rows). Some students will have one counter left over.

2. Instruct students to draw their array at the top of their page and label it with the total number of counters in it. This total number of counters will be the 'original number' in the challenge.

3. Set the challenge of 'making it even' for those with odd numbers and 'keeping it even' for those with an even number. The task requires students to choose an operation (addition, subtraction, multiplication or division) and apply the chosen operation to the original number to *make* it even or *keep* it even.
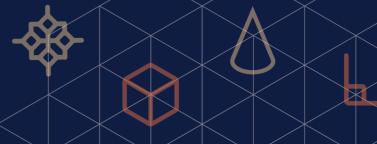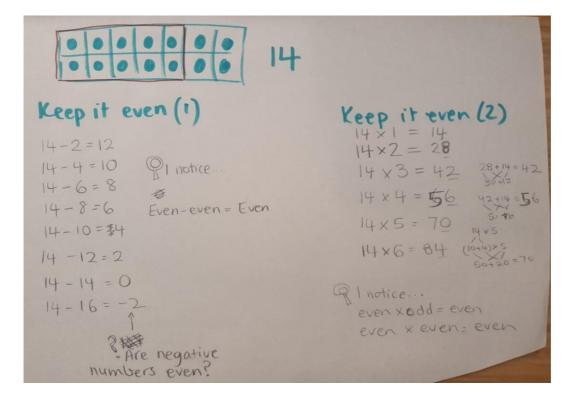
   Encourage students to record:
   - any observations (what do they notice)
   - any questions (what they're wondering)
   - any predictions (what rule they think might work to keep or make their number even).

   Worked examples

Keep it even (1)

$14 - 2 = 12$
$14 - 4 = 10$
$14 - 6 = 8$
$14 - 8 = 6$
$14 - 10 = 4$
$14 - 12 = 2$
$14 - 14 = 0$
$14 - 16 = -2$

I notice...

Even - even = Even

- Are negative numbers even?

Keep it even (2)

$14 \times 1 = 14$
$14 \times 2 = 28$
$14 \times 3 = 42$
$14 \times 4 = 56$
$14 \times 5 = 70$
$14 \times 6 = 84$

$28 + 14 = 42$
$30 + 12$

$42 + 14 = 56$
$50 \quad 6$

14×5
$(10 + 4) \times 5$
$50 + 20 = 70$

I notice...
even $\times$ odd = even
even $\times$ even = even

Variation: Repeat this investigation but this time 'making' or 'keeping' the number **odd**.